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Original Research

Evaluating role of transcutaneous perianal ultrasonography in assessment of perianal fistulae with MRI correlation

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ABSTRACT:

Aim: To evaluate role of transcutaneous perianal ultrasonography in assessment of perianal fistulae with MRI correlation. Methodology: 80 cases of perianal fistulae of both genders underwent perianal sonography and MRI examinations. St. James's classification and Parks classification was recorded. **Results:** Out of 80 patients, males were 44 (55%) and females were 36 (45%). Type was intersphincteric in 42%, transsphincteric in 38%, suprasphincteric in 16% and Extrasphincteric in 4%. The difference was significant (P < 0.05). St. James's classification showed grade I in 34%, grade II in 20%, grade III in 12%, grade IV in 24% and grade V in 10% cases. The difference was significant (P < 0.05). Detection of primary fistulous and sinus tract was positive on TPUS and MRI in all 80 cases, detection of secondary tracts/ramifications was positive on 7 cases on TPUS and 8 cases on MRI, detection of abscess was seen in 10 cases on TPUS and 9 cases on MRI and detection of internal opening was seen in 76 cases in TPUS and 74 cases of MRI. **Conclusion:** TPUS is an efficient method in the evaluation of perianal fistulae. It has high sensitivity and specificity in diagnosing and classifying perianal fistulae and abscess as compared to MRI.

Key words: fistula, MRI, USG

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INTRODUCTION

Perianal fistula is a connection between the anal canal and the skin of the perineum. It implies a chronic granulating track connecting two surfaces lined by epithelium. Most patients present between the ages of 20 and 60 years with a twofold to fourfold male preponderance. Fistulae are not so common in children.¹

Idiopathic fistulas are generally believed to represent the chronic phase of intramuscular anal gland sepsis (ie, the cryptoglandular hypothesis). However, perianal fistulas may also be caused by other conditions and events, including Crohn disease, tuberculosis, trauma during childbirth, pelvic infection, pelvic malignancy, and radiation therapy.² Anal glands lie at the level of the dentate line in the midanal canal and can penetrate the internal sphincter to lie in the intersphincteric plane. From this space, the infection may track down the inters phincteric plane to the skin, and about 70% of fistulas behave in this way. Alternatively, infection may pass through both layers of the anal sphincter to enter the ischiorectal fossa; this development pattern occurs in about 20% of cases.³

Endoanal ultrasound (EAUS) and magnetic resonance imaging (MRI) of the pelvis are commonly employed for imaging of perianal fistulae, sinuses, and abscesses.⁴ Transcutaneous perianal sonography (TPUS) represents another method to detect perianal inflammatory disease, which can be performed using regular US probes without special patient preparation.⁵ It is a quick, non-invasive, and feasible technique for the evaluation of various pathologic conditions of the pelvic floor. Patients are asked to lie down in the dorsal or left lateral decubitus position and the US probe is then placed near the anal opening. US scanning is done in the axial, sagittal, and coronal planes in order to screen the perianal regions.⁶The present study evaluated role of transcutaneous

perianal ultrasonography in assessment of perianal fistulae with MRI correlation.

METHODOLOGY

A sum total of eighty adult patients of perianal fistulae of both genders were selected for this study. All were informed regarding the study and their written consent was obtained. Ethical approval was also taken before starting the study. Demographic profile was entered in case sheet. All were planned for perianal sonography performed using high-resolution 3 to 8 MHz linear and 2 to 5 MHz sector probes percutaneously. Patients also underwent MRI examinations with 1.5 Tesla Philips machine. Parks classification and St James's University Hospital MRI Classification of perianal fistulas were applied. The results were compiled and subjected for statistical analysis using Mann Whitney U test. P value less than 0.05 was set significant.

RESULTS

Table I: Distribution of patients

Total- 80				
Gender	Males	Females		
Number	44 (55%)	36 (45%)		

Out of 80 patients, males were 44(55%) and females were 36 (45%) (Table I).

Table II: Parks classification on TPUS

Туре	Percentage	P value
Intersphincteric	42%	0.05
Transsphincteric	38%	
Suprasphincteric	16%	
Extrasphincteric	4%	

Type was intersphincteric in 42%, transsphincteric in 38%, suprasphincteric in 16% and Extrasphincteric in 4%. The difference was significant (P < 0.05) (Table II).

Table III: St. James's classification of perianal fistula on MRI

Grade	Percentage	P value
Ι	34%	0.25
II	20%	
III	12%	
IV	24%	
V	10%	

St. James's classification showed grade I in 34%, grade II in 20%, grade III in 12%, grade IV in 24% and grade V in 10% cases. The difference was significant (P < 0.05) (Table III)

Table IV: Comparison of TPUS and MRI

Parameters	Positive on TPUS	Positive on MRI
Detection of primary fistulous and sinus tract	80	80
Detection of secondarytracts/ramifications	7	8
Detection of abscess	10	9
Detection of internal opening	76	74

Detection of primary fistulous and sinus tract was positive on TPUS and MRI in all 80 cases, detection of secondary tracts/ramifications was positive on 7 cases on TPUS and 8 cases on MRI, detection of abscess was seen in 10 cases on TPUS and 9 cases on MRI and detection of internal opening was seen in 76 cases in TPUS and 74 cases of MRI (Table IV).

DISCUSSION

A fistula is defined as an abnormal connection between two structures or organs or between an organ and the surface of the body. In the case of perianal fistula, it is a connection between the anal canal and the skin of the perineum.⁷ Perianal fistulization is an uncommon process, with a prevalence of 0.01%, although it causes significant morbidity. It predominantly affects young males, with a male-tofemale ratio of 2:1. The most common presenting symptom is discharge (65% of cases), but local pain due to inflammation is also common.⁸The use of a rigid EAUS probe can be traumatic or even not possible in patients with inflammatory perianal disease due to anal canal stenosis. EAUS does not allow the evaluation of pathological changes extending to involve the gluteal region.⁹ The present study evaluated role of transcutaneous perianal ultrasonography in assessment of perianal fistulae with MRI correlation.

Our results showed that out of 80 patients, males were 44 (55%) and females were 36 (45%). Domkundwar et al^{10} assessed the role of transcutaneous perianal ultrasonography in evaluation of fistulas in ano in 30

patients. 11 of 30 patients had the presence of a collection or abscess, which appeared as hypoechoic areas. 24 of 29 patients with positive findings underwent surgery. In these, 35 of 39 tracts were surgically confirmed. The positive predictive value for demonstration of an internal opening was 85% when compared with direct visualization or probing. Sensitivity for detection of tracts was 100%, and that for demonstration of an internal opening was 96%. The negative predictive value for sinus/fistulous tracts 100%. Transcutaneous was nearly perianal ultrasonography could not adequately evaluate suprasphincteric-type fistulas.

Our results showed that type was intersphincteric in 42%, transsphincteric in 38%, suprasphincteric in 16% and extrasphincteric in 4%. Varsamis et al¹¹ found that pelvic MRI is superior to EAUS for the evaluation of perianal fistulas. Preoperative pelvic MRI is associated with statistically significant better results and prognosis after surgical treatment of the disease. Preoperative EAUS poses high sensitivity and specificity in identifying intersphincteric and transsphincteric perianal fistulas, as well as the internal opening of a fistula-in-ano. Sensitivity of both - pelvic MRI and EAUS was acceptably high. Specificity of pelvic MRI was 0.69 in comparison to EAUS but both values are considered low.

Our results showed that St. James's classification showed grade I in 34%, grade II in 20%, grade III in 12%, grade IV in 24% and grade V in 10% cases. Wedemeyer et al¹² confirmed high sensitivity and specificity of TPUS when compared with pelvic MRI for diagnoses and characterization abscess with excellent agreement between the two imaging methods.

Detection of primary fistulous and sinus tract was positive on TPUS and MRI in all 80 cases, detection of secondary tracts/ramifications was positive on 7 cases on TPUS and 8 cases on MRI, detection of abscess was seen in 10 cases on TPUS and 9 cases on MRI and detection of internal opening was seen in 76 cases in TPUS and 74 cases of MRI. Singh et al¹³assessed the role of transcutaneous perianal ultrasonography (TPUS) in 37 patients with perianal fistula. The most common age group of presenting individuals was 45 to 60 years with male to female ratio of 6.4:1. There was excellent agreement between TPUS and MRI for detecting primary fistulous tract with kappa correlation coefficient of 1. The kappa correlation coefficient for detecting secondary fistulous tracts and abscess on TPUS and MRI was 0.839 and 0.937 showing excellent agreement. Moderate agreement was seen with kappa correlation coefficient of 0.839 in the detection of internal opening on TPUS and MRI.

CONCLUSION

TPUS is an efficient method in the evaluation of perianal fistulae. It has high sensitivity and specificity in diagnosing and classifying perianal fistulae and abscess as compared to MRI.

REFERENCES

- Orsoni P, Barthet M, Portier F, Panuel M, Desjeux A, Grimaud JC. Prospective comparison of endosonography, magnetic resonance imaging and surgical findings in anorectal fistula and abscess complicating Crohn's disease. Br J Surg 1999;86(03): 360–364.
- Schwartz DA, Wiersema MJ, Dudiak KM, et al. A comparison of endoscopic ultrasound, magnetic resonance imaging, and exam under anesthesia for evaluation of Crohn's perianal fistulas. Gastroenterology 2001;121(05):1064–1072.
- Morris J, Spencer JA, Ambrose NS. MR imaging classification of perianal fistulas and its implications for patient management. Radiographics 2000;20(03):623–635.
- 4. Lilius HG. Fistula-in-ano, an investigation of human foetal anal ducts and intramuscular glands and a clinical study of 150 patients. Acta Chir Scand Suppl 1968;383:7–88.
- 5. Joshi A, Siledar S. Role of MRI in ano-rectal fistulas. Curr Radiol Rep 2014;21–29.
- Sainio P. Fistula-in-ano in a defined population. Incidence and epidemiological aspects. Ann Chir Gynaecol 1984;73(04): 219–224.
- 7. Abcarian H. Anorectal infection: abscess-fistula. Clin Colon Rectal Surg 2011;24(01):14–21.
- 8. Sharma G, Mohan M. MRI in the evaluation of perianal fistulas. J evid based med healthc 2015;2:2863–2871.
- Parks AG. Pathogenesis and treatment of fistula-inano. BMJ 1961;1(5224):463–469 5 McColl I. The comparative anatomy and pathology of anal glands.Arris and Galelecture delivered at the Royal College of Surgeons of England on 25th February 1965. Ann R Coll Surg Engl 1967;40(01):36–67.
- Domkundwar SV, Shinagare AB. Role of transcutaneous perianal ultrasonography in evaluation of fistulas in ano. Journal of ultrasound in medicine. 2007 Jan;26(1):29-36.
- 11. Varsamis N, Kosmidis C, Chatzimavroudis G, Sapalidis K, Efthymiadis C, Kiouti FA, Ioannidis A, Arnaoutoglou C, Zarogoulidis P, Kesisoglou I. Perianal fistulas: A review with emphasis on preoperative imaging. Advances in Medical Sciences. 2022 Mar 1;67(1):114-22.
- 12. Wedemeyer J, Kirchhoff T, Sellge G, et al. Transcutaneous perianal sonography: A sensitive method for the detection of perianal inflammatory lesions in Crohn's disease. World J Gastroenterol 2004;10(19):2859–2863.
- 13. Singh A, Kaur G, Singh JI, Singh G. Role of Transcutaneous Perianal Ultrasonography in Evaluation of Perianal Fistulae with MRI Correlation. Indian Journal of Radiology and Imaging. 2022 May 1.